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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,526	03/29/2001	James Patrick Quaile	RD-28,219	6075

6147 7590 03/22/2004

GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
SCHENECTADY, NY 12301-0008

EXAMINER

NGUYEN, ANH T

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

09/821,526

Applicant(s)

QUAILE, JAMES PATRICK

Examiner

Anh T Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This action is responsive to communications: Amendment A, filed 01/12/04.

Claims 1-20 are pending in this application.

This action is Final.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom (USPN 5,832,465) in view of "GENIUS™ Automated Underwriting System: Combining Knowledge Engineering and Machine Learning to Achieve Balanced Risk Assessment" Golibersuch et al., Proceedings of the 7th Innovative Applications of Artificial Intelligence Conference, Aug.21-23, 1994, Montreal, Quebec, pp.49-61., hereinafter Golibersuch .

Tom teaches the system and method as claimed. However, Tom does not particularly teach the system and method wherein some of said evidential values comprise unknown information. Golibersuch teaches the system and method wherein some of said evidential values comprise unknown information.

By including inadequacies such as missing or unknown attributes or evidential values, the system and method as claimed would identify potential problems and anticipate default values

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for a consistent and optimized knowledge base. Thus, faithfully emulating the experts' behavior that an expert would take if certain facts were unknown.

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the system and method as taught by Tom and to incorporate the missing or unknown attributes or evidential values as taught by Golibersuch to generate the claimed invention with a reasonable expectation of success for the reasons set forth above.

#### **Regarding claim 1**

Tom teaches,

- providing a model structure including a plurality of processing nodes, each of said processing nodes coupled to receive a set of inputs to supply a respective output [Fig.1;(col.11, lines 35-40, "model structure...set of inputs and output")];
- evaluating a respective attribute assigned to each of the plurality of processing nodes [Fig.1;(col.11, lines 45-48, "number of attributes...plurality of processing nodes")];
- specifying a number of possible linguistic evidential values for each of said attributes [Fig.1;(col.11, lines 48-49 and col.4 lines 34-37, "evidential data...not limited to...may have other attribute")],
- and combining the outputs from said processing nodes to reach a decision even in the presence of said unknown information, said combining configured to emulate expert data [Fig.1;(col.3, lines 44-46, "linguistic evidence values are combine")].

However, Tom does not particularly teach the system and method wherein some of said evidential values comprise unknown information. It is noted however that Tom does not exclude

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the possibility of unknown information (col.4, lines 34-37, “evidential data...not limited to...may have other attribute”).

Golibersuch teaches,

- the system and method wherein some of said evidential values comprise unknown information (page 56,col.1, “include inadequacies...missing or unnecessary attributes or values”)

### **Regarding claim 2**

Tom teaches,

- a hierarchical model structure [Fig.1;(col.11, lines 35-40, “defining hierarchical model structure”)].

### **Regarding claim 3**

Tom teaches,

- outputs from lower processing nodes are successively passed as inputs to higher level processing nodes until a final output is generated from the highest level processing node in the hierarchical model structure, said final output comprising said decision (col.2, lines 4-8, “outputs from lower processing nodes...final output is generated”).

### **Regarding claim 4**

Tom teaches,

- expert data is collected during a learning stage from a plurality of examples for each of the processing nodes, each of the plurality of examples having a set of inputs [Fig.1;(col.4, lines 55-58, “examples of evidential data...supplied by experts”)],

Golibersuch teaches,

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- the system and method some indicative of unknown information, and a corresponding output indicative of an expert opinion some of said evidential values comprise unknown information (page 56, col.1 “include inadequacies...missing or unnecessary attributes or values”).

#### **Regarding claim 5**

Tom teaches,

- plurality of examples is used during said learning stage to configure the processing nodes in the model structure to generate a final output from a given set of inputs[Fig.1;(col.3, lines 39-43, “transferred into a learning”)], the model structure being configured so that said final output and the expert opinion from the plurality of examples are statistically equivalent to one another[Fig.1;(col.2, lines 19-21, “model structure...minimal error between”)].

#### **Regarding claim 6**

Golibersuch teaches,

- identifying expert opinion that deviates from a majority of the plurality of examples [page 56,col.1, “differences between these opinions”]

#### **Regarding claim 7**

Golibersuch teaches,

- adjusting said identified expert opinion to correct any deviations therein. [page 56, col.1, “reviewed results and suggested changes and improvements”]

#### **Regarding claim 8**

Golibersuch teaches,

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- reconfiguring the processing nodes to include any adjusted expert opinion. [page 56, col.1, paragraph 1 “As such problems...iterated until a consistent knowledge base was obtained”]

**Regarding claim 9**

Golibersuch teaches,

- disregarding said identified expert opinion to remove any deviations therein. [page 56, col.1, paragraph 1 “As such problems...iterated until a consistent knowledge base was obtained”]

**Regarding claim 10**

Golibersuch teaches,

- reconfiguring the processing nodes omitting any disregarded expert opinion. [page 56, col.1, paragraph 1 “As such problems...iterated until a consistent knowledge base was obtained”]

**Regarding claim 11**

Golibersuch teaches,

- making the model structure available over a global communications network during a production stage for processing financial service applications. (page 57,col.1, lines 1-3, ”distributed client-server environment”)

**Regarding claim 12**

Tom teaches,

- A computerized method for making decisions based on evidential reasoning, said decisions used for risk and credit analysis of financial service applications

[Fig.1; (col.2, lines 32-53, “performing risk...evidential numeric value”)].

**Regarding claim 13**

Tom teaches,

- plurality of examples comprises a plurality of hypothetical examples[Fig.1;(col.3, lines 33-38, “number of possible evidential values for the attributes ...various examples”)].

**Regarding claim 14**

Golibersuch teaches,

- plurality of examples comprises historical data from previously processed applications.

[page 56, col.1, “actual historical applications”]

**Regarding claim 15**

- Rejection of claim 12 is incorporated and further contains limitation recites in claim 12; therefore claim 15 is rejected under same rationale as claim 12.

**Regarding claim 16**

Tom teaches,

- model structure is configured to provide a plurality of non-overlapping intervals over its possible output space, said model structure being further configured to optimize separation between any adjacent intervals of said possible output space so that said final output unambiguously maps into a single interval of said output space. [col.4, lines 38-42, “aggregate...mapped to”)]

**Regarding claim 17**

- Rejection of claims 1 and 12 is incorporated and further claim contain limitation recites in claims 1 and 12, therefore claim 17 is rejected under same rationale as claims 1 and 12.



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**Regarding claim 18**

- Rejection of claim 17 is incorporated and further claim contain limitation recites in claim 17, therefore claim 18 is rejected under same rationale as claim 17.

**Regarding claim 19**

- Rejection of claim 18 is incorporated and further claim contain limitation recites in claim 18, therefore claim 19 is rejected under same rationale as claim 18.

**Regarding claim 20**

- Rejection of claims 1, 12 and 17 is incorporated and further claims contain limitation recites in claims 1, 12 and 17 , therefore claim 20 is rejected under same rationale as claims 1, 12 and 17.

***Response to Arguments***

2. Applicant's arguments filed on 01/12/04 have been fully considered but are not persuasive.

As to independent claims 1, 12, 17, and 20, The applicant argues that the combination of Tom in view of Golibersuch fails to disclose or suggest using some evidential values that comprise unknown information as taught in applicant's claimed invention. Before addressing the argument, the examiner submits that the language of the limitation cited in the claims in question is given the broadest reasonable interpretation in light of the specification. The examiner disagrees with the applicant for the following reasons:

Examiner would like to refer to Applicant's disclosure, page 4, lines 11-13, which recites, "The present invention further improves the foregoing technique to enable automated decision making, particularly, in situations when there are missing pieces of evidence." With this in

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mind, the examiner submits that the combination of Tom in view of Golibersuch does teach or suggest using some evidential values that comprise unknown information (i.e. “missing pieces of information”) as recited in applicant’s disclosure. Specifically, Golibersuch clearly teaches identifying inadequacies such as: “missing attributes and values” (page 56 in column 1). In addition, Golibersuch teaches, “attributes for each node and possible values for each attribute were specified” (page 56 in column 1). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the unknown or missing information in the invention of Tom because doing so would fully encompass all possible scenarios or combinations, resulting in a knowledge base that more closely emulates the experts’ behavior.

### ***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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*Inquiries*

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh T Nguyen whose telephone number is (703) 305-8649. The examiner can normally be reached on Mon.-Fri. (7:00 a.m.- 4:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

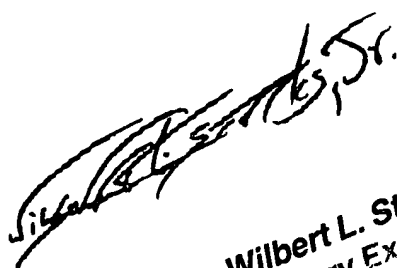
The fax number for the organization where this application or proceeding is assigned are as follows:

(703) 746-7238 [After Final Communication]

(703) 746-7239 [Official Communication]

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anh T Nguyen  
Examiner  
Art Unit 2127



Wilbert L. Starks, Jr.  
Primary Examiner  
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